

Problems in Land Use Planning for Disaster Risk Reduction at the Local Government Level in Indonesia

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1. Introduction

Indonesia has experienced numerous major disasters, including the tsunami in Aceh in 2004, the earthquake in Yogyakarta in 2006, the mudflows in Sidoarjo in 2006, the earthquake in Padang in 2009, the Merapi Eruption in 2010, and more. In light of its geographic condition, disaster mitigation-based spatial planning is required for safety and a more comfortable life and livelihood. This paper describes the problems of disaster risk reduction (DRR) for a general municipal spatial plan (RTRW) in the transitional time allotted for implementation of the Spatial Planning Law Number 26/2007 (SP 26/2007). It is based on the results derived from the questionnaire results of 35 local government officers who were involved in the improvements of RTRW in Java, Kalimantan, Sumatera, Bali, and Lombok.

2. The role of spatial planning in disaster risk reduction (DRR)

Spatial planning involves the process of allocation, forming, sizing, and harmonizing space (land) for multifunctional uses¹⁾, therefore establishing that spatial planning has the possibility to reduce losses associated with disasters. Four possible roles of spatial planning for disaster risk reduction²⁾ are a) making differentiated decisions on land use; b) keeping areas free of development; c) following recommendations for legally binding land use or zoning plans; and d) undertaking hazard modification. It means that land use is one of the key elements for DRR at the local level.

RTRW that is based on SP 26/2007 should include 8 items: 1) goal and strategy of spatial planning; 2) spatial structure plan of a city; 3) spatial pattern plan of a city; 4) determination of the strategic area; 5) a transportation network plan; 6) an infrastructure plan; 7) a land use plan; and 8) control of spatial utilization. This research focuses on the land use plan because it is a powerful strategy for development in light of the percentage of natural hazards. For this research, land use planning is a process of deciding whether and how to develop and redevelop land under the auspices of SP 26/2007.

3. General Municipal Spatial Plan (RTRW) for Implementation of Spatial Planning Law 26/2007

In 2007, the Indonesian government amended Spatial Planning Law number 24/1992 and regarding disaster management, the government issued Disaster Management Law number 24/2007 (DM 24/2007). SP 26/2007 stipulates certain new articles related to DRR, such as the minimal standard of services for spatial planning, namely more than 30% of open spaces in urban areas and more than 30% of forest areas in river stream areas. SP 26/2007 also provides new ways for enhancing development control schemes that include zoning, planning permits, implementation of incentives and disincentives, and imposing sanctions that include administration and criminal sanctions³⁾. SP 26/2007 also validates the importance of public participation in spatial planning. DM 24/2007 articulates the implementation and enforcement of spatial planning purposes for DRR and is comprised of precise enactment for spatial planning regulation, safety standards, and sanctions against violators.

In order to implement SP 26/2007, new RTRW at districts and municipalities must be issued within three years after the promulgation of SP 26/2007. Districts and municipalities should devise new RTRW by the end of 2010. Implementation of the spatial planning role in DRR should be effectively conducted at the local government level because local government has a particular responsibility to bring together multiple sectors and different people within their constituencies for a better community. In order to investigate the improvement in RTRW based on SP 26/2007 and the application of DRR in RTRW, questionnaires were distributed to 106 local government officers involved in the improvement of RTRW in Java, Kalimantan, Sumatera, Bali, and Lombok. Of these, 35 responses were obtained. **Table 1** shows the conditions of implementation for SP 26/2007 related to improvement of RTRW up to September 2010. It can be seen that only 14 districts and 4 municipalities achieved the target of SP 26/2007 for stipulating new RTRW. Technical assistance for the accelerated improvement of RTRW at the local government level has been done by the Ministry of Public Work. However the new RTRW at the local level have not been improved and only 14 districts from 398 districts and 4 municipals from 93 municipalities have completed the new RTRW as shown in **Table 1**. **Table 2** shows the problems related to improvement of RTRW under SP 26/2007 based on the 35 responses. These problems are caused by 1) difference in interest among stakeholders (34.3%); 2) unclear and incomplete instruments for SP 26/2007 (31.4%); a complicated procedure at national level (17.1%); and 3) the lack of spatial data for analysis (8.5%).

Table 1 Progress in improvement of municipal general spatial plan (RTRW) under SP 26/2007⁴⁾

Progress	Province	District	Municipality
Not Revision yet	0	6	0
Ongoing Process revision			
In local level	0	227	22
In province level	5	93	43
In national level	14	56	17
Municipal ordinance	7	8	7
Finish	7	14	4
Total	33	398	93

Table 2 Problem regarding improvement of the spatial planning document (RTRW) under SP 26/2007 at the local level

Problems in improment of RTRW under SP 26/2007	District	Municipality	Grand Total
Difference in interest among stakeholders	7 (20,0%)	5 (14,3%)	12 (34,3%)
Unclear and incomplete instruments for SP 26/2007	7 (20,0%)	4 (11,4%)	11 (31,4%)
A complicated procedures at national level	5 (14,3%)	1 (2,9%)	6 (17,2%)
Lack of spatial data for analysis	2 (5,7%)	1 (2,9%)	3 (8,6%)
Doesn't have problem	2 (5,7%)	1 (2,9%)	3 (8,6%)
Grand Total	23 (65,7%)	12 (34,3%)	35 (100%)

Table 3 Problem regarding improvement of land use planning at the local level under SP 26/2007 at the local level

Problems in improment of land use under SP 26/2007	District	Municipality	Grand Total
Difference in interest among stakeholders	7 (20,0%)	3 (8,6%)	10 (28,6%)
Compliance 30% of urban area of open space	1 (2,9%)	6 (17,1%)	7 (20,0%)
Land use plang at border area	6 (17,1%)	1 (2,9%)	7 (20,0%)
Lack of spatial data for analysis	4 (11,4%)	2 (5,7%)	6 (17,1%)
Doesn't have problem	4 (11,4%)	0 (0,0%)	4 (11,4%)
A complicated procedure	1 (2,9%)	0 (0,0%)	1 (2,9%)
Grand Total	23 (65,7%)	12 (34,3%)	35 (100%)

4. Problems regarding land use planning for DRR at the local level

Land use at the local level plays an important tool for DRR because the local government has an opportunity to collect, manage and publish spatial information. **Table 3** shows the difficulties involved in improving a land use plan at the local level based on 35 respondents. It can be seen that the difference in interest among stakeholders is the biggest difficulty for 28.6% when developing and redeveloping land use. SP 26/2007 promotes interaction among land users, decision-makers, and professionals. The interaction among land users produces problems, such as competition for land utilization among these users. Other problems are: 1) compliance of 30% of open space (20.0%); 2) land use plan at border area (20.0%); and 3) lack of spatial data for analysis (17.1%). Compliance of 30% of open space is a new article in SP 26/2007. The function of 30% of open space area related to DRR is for disaster evacuation space. Public land acquisition is most often carried out for the primary purpose of protecting and expanding open space, and therefore policy instruments for managing and protecting open space are needed. This problem is more often experienced by the municipality (17.1%) rather than the district (2.9%) as the characteristics of an urban area are those of a region with a main activity not in the agricultural field, and has areas structured as urban residences, centralization and distribution of governmental services, and social services and economic activities, resulting in high competition for land utilization. Spatial data is needed for modification of hazards, but 17.1% of the respondents found difficulty in getting such data. Local governments must have detailed spatial data.

Land use planning at border areas is also a crucial issue for 20.0% as shown in **Table 3**. Land use planning under SP 26/2007 has to manage with coordination among surrounding areas. Land use planning at border areas is important to gain attention because disasters impact areas outside administrative boundaries. For example, the mudflow disaster occurred in the Sidoarjo District, but the impacts of that disaster lay outside the Sidoarjo Regency. **Table 4** shows the types of co-operation related to DRR among municipalities. It shows that only 20% of local governments do not have co-operation among municipalities related to DRR at border area. Co-operation among municipalities is needed, as the intensity and scale of disasters has tended to increase in recent times. Types of such co-operation are: 1) Synchronization of land use at border areas (31.4%); 2) Disaster mitigation plan at border areas (28.6%); 3) infrastructure planning (14.3%) and 4) making maps of disaster prone areas at borders (5.7%). Most local governments (31.4%) have completed synchronization of land use at their border areas, but must continue their implementation of a land use plan because land use at the border area will dynamically change due to weak restriction of regulation.

Table 4 Type co-operation among municipalities related to DRR under SP Law 26/

Type of co-operation among municipalities	District	Municipality	Grand Total
Synchronization of land use at border areas	8 (22,9%)	3 (8,6%)	11 (31,4%)
Disaster mitigation plan at border areas	5 (14,3%)	5 (14,3%)	10 (28,6%)
There is no co-operation	7 (20,0%)	0 (0%)	7 (20,0%)
Infrastructur planning	3 (8,6%)	2 (5,7%)	5 (14,3%)
A map of disaster prone area	0 (0%)	2 (5,7%)	2 (5,7%)
Grand Total	23 (65,7%)	12 (34,3%)	35 (100%)

5. Summary

1. In the process of the implementation of SP 26/2007, improving the spatial planning document (RTRW) at the local level is marginalized in the decision-making process and is highly influenced by politic-economic objectives. Only 14 districts out of 398 districts and 4 municipals out of 93 municipalities completed the new RTRW at the end of 2010.
2. SP 26/2007 offers opportunities to improve land use for DRR, such as keeping areas for open space, classifying different land use for specific area, hazard modification, etc. However the implementation faced difficulties due to different interests among stakeholders and lack of policy instruments and spatial data. Therefore, establishing a strictly and standardized land use planning at the local level should be promulgated, especially for compliance of 30% for open space. Sharing of a spatial database should be established from the national to the local level because the lack of spatial data is one of the difficulties related to the arrangement of new RTRW and land use at the local level.

Reference

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- 3) Ministerial of State Secretariat of Republic of Indonesia (2007): National Law of Spatial Planning 26/2007, (in Indonesian).
- 4) Department of Public Work, Indonesia: The website of Directorate of Spatial Planning, <http://www.pu.go.id/punetnew2010/subindex.asp?pid=0406> access on Dec 25 2010.